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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,397	07/29/2003	Michael W. Price	SP02-174	7235

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CORNING INCORPORATED
SP-TI-3-1
CORNING, NY 14831

EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,397

Applicant(s)

PRICE ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 9-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the instant specification, page 4, paragraph [0023], it is disclosed that the blanks and elements made therefrom, have a 193 nm transmission > 99% and a 157 nm transmission > 97%. In paragraph [0033], transmission is also disclosed with “%” only. However, in paragraph [0025], it is disclosed a grown scatter-free optical fluoride crystal having a chlorine concentration less than 0.25 ppm Cl by weight and a below nm transmission > 99%/cm. In paragraphs [0026]-[0027], [0044], [0046], [0047], [0052], [0053] the transmission is also expressed in “%/cm” unit. As argued by Applicants against Sakuma (6,377,332) reference, there is a difference between an “internal transmission”, which is disclosed in Sakuma as having “%/cm” unit and an “overall transmission”, which has just “%”, thus, the transmission as disclosed in the instant specification cannot be both “internal transmission” and “overall transmission” at the same time. As disclosed in Sakuma '548, the overall transmission is dependent on the

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thickness of the fluoride crystal, thus, if the instant claims now require the "overall transmission" to be > 99%, the specification would lack enabling disclosure as to how to produce a fluoride crystal with transmission >99% for <200 nm for all thicknesses. It should be noted that there is no support for the ">99%" or ">98%" as now required in the instant claims 3-8 in the provisional application 60/401,822.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakuma (EP 1 026 548), optionally in view of Bardsley et al ("Optical scattering in calcium fluoride crystals", Brit. J. Appl. Phys, 1965, Vol. 16, pp. 911-912) to show inherent state of fact.

Sakuma '548 discloses an optical member for photolithography comprising a calcium fluoride crystal exhibiting an internal transmittance of 99.5%/cm or greater with respect to light emitted from an F₂ laser (i.e. 157 nm) (note claims 1, 3 and paragraph [0001]).

For this rejection, the "scatter-free" is read in light of the specification as having a 157 nm transmission of >98%/cm (note paragraph [0047]), and when the calcium fluoride is "scatter-free", it has low chlorine and sulfur impurities (note paragraph [0053])

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Sakuma '548 does not specifically disclose the concentration of chlorine in the calcium fluoride crystal, however, since the crystal of Sakuma '548 has a 157 nm (F₂-laser) transmission of greater than 99.5%/cm, which is higher than the 98%/cm (this is treated as "internal transmission" because of the "%/cm" unit) as disclosed in the instant specification, as being "scatter-free", the crystal of Sakuma '548 would be as "scatter-free" as the claimed fluoride crystal. Subsequently, since the crystal of Sakuma '548 would be "scatter-free", it would have low chlorine impurity level.

Bardsley can be applied to teach that while it is generally believed that scatter in calcium fluoride is caused by calcium oxide, chlorine and sulfur can also cause scatter. Thus, the teaching of Bardsley fairly teaches the presence of any amount of chlorine and sulfur would cause scatter. In Sakuma '548, since the calcium fluoride crystal has high internal transmission of 99.5 %/cm or greater, i.e., "scatter-free" (note reason above), the chlorine and sulfur amount in the calcium fluoride crystal of Sakuma '548 must be below the claimed amount otherwise, scattering would have occurred as taught in Bardsley.

The product of Sakuma '548 anticipates the claimed product.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al (EP 1 026 548) in view of Hammond et al (6,093,245).

Sakuma '548 discloses an optical member for photolithography comprising a calcium fluoride crystal exhibiting an internal transmittance of 99.5%/cm or greater with respect to light emitted from an F₂ laser (i.e. 157 nm) (note claims 1 and 3 and paragraph [0001]).

The difference is Sakuma '548 does not disclose the chlorine concentration in the fluoride crystal.

Hammond '245 discloses that highly pure crystal of alkali metal halide material is useful as optical elements (note column 1, lines 29-40). Hammond '245 further discloses that graphite has been used as a crucible material for growing calcium fluoride and barium fluoride. It has the desirable properties of being very resistant to corrosion by these inorganic crystal materials, being able to withstand the high temperature needed to melt the crystal material, and resulting in little contamination. Unfortunately however, graphite is porous. When it is used as a crucible material for alkali metal halide crystal growth, the melt leaks into and through the crucible, thus making such a crucible unsuitable for alkali metal halide crystal growth. In addition, surface of the graphite upon cooling, thereby preventing their ready removal from the crucible without damage to either the boule or the crucible (note column 2, lines 34-52).

Sakuma '548 discloses a crucible comprising a vessel of porous carbon having a wall with a thickness, an outer surface, and an inner surface; a surface depth region of at least the inner surface being impregnated with additional carbon to close open porosity at

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the surface (note claim 1). The porous carbon can be graphite (note claim 2) and the addition carbon can be graphitic pyrolytic carbon (note claim 3) or glassy carbon (note claim 4). The crucible can be used for growing calcium fluoride (note column 6, lines 28-32).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to maximize the purity of the calcium fluoride disclosed in Sakuma '548, as suggested by Hammond '245. Also, it would have obvious to one skilled in the art to use the crucible of Hammond '245 in the process of producing the calcium fluoride of Sakuma '548 because such crucible would permit release of the cooled crystal without remelting (note abstract), since graphite was not in contact with the crystal, any chloride impurity in the graphite would not migrate to the crystal itself.

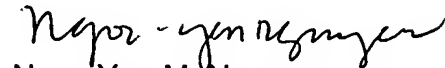
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 or (571) 273-8300.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.


Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
May 30, 2006